

# CHEMICALS

## Project Fact Sheet



## PLASTIC MANUFACTURING THROUGH RECOVERED POST-CONSUMER GOODS

### DENSITY OVERLAP SORTING TECHNOLOGY ENABLES MORE EFFICIENT PLASTIC RECYCLING

#### Benefits

Substantial energy, waste, and production savings can be gained through recycling rather than producing virgin plastic.

For example, in a facility producing 500 million pounds of product per year:

- Annual savings of an estimated 37,500 Btu
- Elimination of 857 tons of greenhouse gas emissions
- Savings of 25 cents per pound
- Lower installation and maintenance costs

In addition, the technology will provide significant nationwide energy, waste, and production savings by the year 2010. With 25% of the plastics manufacturing industry using the technology:

- Savings of approximately 112 trillion Btu
- 3 billion pounds of used plastics and 5 billion pounds of residual metals will not be dumped in landfills
- Reduction of around \$140 million in capital costs
- Reduction of nearly \$50 million in installation costs
- Savings of approximately \$750 million industry-wide

#### Applications

This technology will enable recycling plants to create plastic feedstocks for chemical industry producers of polymers.

MBA Polymers, with assistance from the Department of Energy's NICE<sup>3</sup> Program, is commercializing a new, state-of-the-art materials separation system for recovering plastics from completely mixed plastic streams. The system offers a novel approach for the plastics industry by using molecular differentiation to allow sorting. Currently, the most common way to handle separation is by hand sorting various types of used plastic, a process that is time-consuming and costly. In addition, across the country there is no infrastructure for recycling that can handle discarded mixed durable plastics, which by the year 2010 are expected to amount to 12 billion pounds per year.

The proposed technology will dramatically reduce the time required to sort various used plastics, including plastic contained in durable goods, such as computers, motor vehicles, sporting equipment, and common household items. This process will reduce the demand for new plastics, meaning that a plant producing 500 million pounds of product per year will save approximately 37,500 Btu. This includes a reduction from 12 billion to less than 1 billion cubic feet in the amount of natural gas required. And, at the same facility, greenhouse gas emissions will also dip by 857 tons.

#### SEPARATION OF RECOVERED PLASTICS



MBA Polymers' new approach to separating plastics includes the use of a hydrocyclone, which spins and separates materials by density.



## Project Description

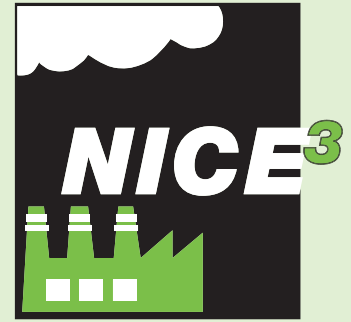
**Goal:** Commercialize an innovative materials separation system for recovering post-consumer durable plastics in completely mixed plastic streams. This project uses mostly manufacturing scrap, which constitutes approximately 10 percent of the available plastic in post-consumer streams, but enables extensive separations to be done with post-consumer plastics as well.

The molecular differentiation technology capitalizes on bulk material properties to differentiate and separate plastics. The advantage of this technique over conventional strategies is that it relies on response to multiple variables, such as pressure, temperature, and shear, to differentiate materials to enable separation by conventional techniques, such as density sorting, screening, and elutriation.

MBA Polymers is demonstrating this new technology with assistance from the California Energy Commission and the NICE<sup>3</sup> Program in the U.S. Department of Energy's Office of Industrial Technologies.

## Progress and Milestones

- Pilot plant demonstration under the grant has been completed.
- Complete detailed engineering for commercial plant.
- Specify and install equipment.
- Ensure unit is fully operational.
- Bring unit to commercialization and complete project.



**NICE<sup>3</sup> – National Industrial Competitiveness through Energy, Environment, and Economics:** An innovative, cost-sharing program to promote energy efficiency, clean production, and economic competitiveness in industry. This grant program provides funding to state and industry partnerships for projects that demonstrate advances in energy efficiency and clean production technologies. Awardees receive a one-time grant of up to \$525,000. Grants fund up to 50% of total project cost for up to 3 years.

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Order # NICE<sup>3</sup> CH-12  
March 2002